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AUTHOR Burts, Diane C.; And Others
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ABSTRACT

An initial study revealed that kindergarten children in a developmentally inappropriate classroom exhibited significantly more stress behaviors than children in a developmentally appropriate classroom. Marginal gender differences were noted. Purposes of the study were to determine whether findings from the initial study would replicate if a larger sample were used, and to explore interactive effects of socioeconomic status (SES) and race with stress and developmentally appropriate and inappropriate practices. A total of 204 kindergarten children in 6 developmentally appropriate and 6 developmentally inappropriate classrooms were observed for behaviors indicative of stress. Findings indicated that the 101 children in inappropriate classrooms exhibited significantly more stress behaviors than the 103 children in appropriate classrooms. Males in inappropriate classrooms displayed more stress than males in appropriate classrooms. Race and SES differences indicated more stress behaviors in lower SES black children than in lower SES white children. More workbook, worksheet, small group, whole group, transition, waiting, and punishment activities were noted in inappropriate classrooms, while more center, story, and music activities were observed in appropriate classrooms. (Author/RH)

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Frequencies of Observed Stress Behaviors in Kindergarten Children:
A Comparison of Developmentally Appropriate and Inappropriate
Classrooms

Diane C. Burts, Craig H. Hart, and Renee' H. Thomasson

School of Human Ecology

Louisiana State University

Rosalind Charlesworth, Pamela O. Fleege, and Jean Mosley

College of Education

Louisiana State University

Paper presented at the American Educational Research Association

Boston, Massachusetts

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Author Burts' address: Family, Child, & Consumer Sciences, School
of Human Ecology, Louisiana State University, Baton Rouge, LA 70803,
(504) 388-2408.

Running head: STRESS BEHAVIORS IN KINDERGARTEN

Abstract

An initial study by the researchers revealed that kindergarten children in a developmentally inappropriate classroom exhibited significantly more stress behaviors than children in a developmentally appropriate classroom. Marginal gender differences were also noted. The purpose of the present study was to determine if findings from the initial study would replicate using a larger sample and to explore interactive effects of SES and race with stress and developmentally appropriate and inappropriate practices. Kindergarten children ($n=204$) in developmentally appropriate and developmentally inappropriate classrooms (6 appropriate, 6 inappropriate) were observed for behaviors indicative of stress. The more substantive findings indicated that children in inappropriate classrooms ($n=101$) exhibited significantly more stress behaviors than children in appropriate classrooms ($n=103$). In addition, males displayed more stress in inappropriate classrooms than males in appropriate classrooms. Race and SES differences indicated more stress behaviors observed in lower SES black children than in lower SES white children. Differences were also found between classrooms in the amount of time spent in various activities. More workbook/worksheet, small group, whole group, transitions, waiting, and punishment activities were noted in inappropriate classrooms, while more center, story, and music were observed in appropriate classrooms.

Frequencies of Observed Stress Behaviors In Kindergarten Children: A Comparison of Developmentally Appropriate and Inappropriate Classrooms

In recent years there has been a trend toward more academically oriented, highly structured programs for young children (Egertson, 1987; Hatch, 1988; Shepard & Smith, 1988; Walsh, 1989). Many child development and early childhood education professionals believe that such practices are inappropriate and potentially harmful since they are not geared to the developmental level of the young child (e.g., Charlesworth, 1985, 1989; Elkind, 1986; Hirsh-Pasek & Cone, 1989; Schweinhart & Weikart, 1988). It is believed that the use of workbooks, ditto sheets, and academic skill-based instruction that is being pushed down from the upper grades is creating undue stress for young children and placing them at risk for later academic failure. Terms such as "hothousing," "hurried," and "miseducation" have been used to describe children enrolled in programs considered developmentally inappropriate (Elkind, 1988, 1989; Hills, 1987; Sigel, 1987).

David Elkind (1986), a foremost spokesperson for the preservation of childhood, has warned of potential short-term and long-term psychological risks as a result of formal instruction with young children. He notes stress as the short-term consequence, while long-term effects involve motivational, intellectual, and social consequences.

The present study is a followup to our initial research (Burts, Hart, Charlesworth, & Kirk, in press) and was designed to explore the relationship between developmentally appropriate and inappropriate instructional practices and the observed stress behaviors of kindergarten children. Three areas of literature guided the development of the project: (a) developmentally appropriate and inappropriate practices, (b) stress, and (c) the relationship between developmentally appropriate and inappropriate practices and stress.

Developmentally Appropriate and Inappropriate Practices

In response to the growing concern about highly academic early childhood programs, the National Association for the Education of Young Children (NAEYC) published a position statement on developmentally appropriate and inappropriate practice in programs serving children birth through age eight (Bredekamp, 1987). The writings of Piaget (1950, 1952, 1972) and Montessori (1964) served as the theoretical foundation for much of the position statement. Piaget and Montessori advocated facilitating children's learning through a

prepared environment where children actively explore concrete materials and interact with peers and adults. The document has been used as the basis for several research projects investigating questions relevant to appropriate and inappropriate practices (e.g., Bentley & Wilson, 1989; Burts et al., In press; Caruso & Oaks, 1988; Charlesworth, Hart, Burts, & Hernandez, 1989; Hyson, Van Trieste, & Rauch, 1989; Jensen & Chevallier, 1988).

In the NAEYC document (Bredekamp, 1987), developmentally appropriate practice is described using the concepts of age appropriateness (knowledge of the typical development of children within an age span) and individual appropriateness (uniqueness of the individual). Appropriate practice includes providing experiences that meet the needs of individual children and promoting self-esteem and positive feelings toward learning. The environment provides for active exploration and concrete experiences. Positive guidance techniques are used, and children have opportunities to make choices. Their natural curiosity and desire to make sense out of the world motivates their learning. Learning is assessed by the use of real objects or high quality pictures, and children are asked to respond to tasks by pointing, constructing, sorting, telling, naming, or drawing (Charlesworth, 1985).

In contrast, inappropriate practice ignores research and expert opinion about young children's development. These practices include almost exclusive use of teacher-directed highly structured, large group lessons; abstract paper and pencil tasks (e.g., workbooks and worksheets) which often must be completed within an inflexible time frame; rote learning; direct teaching of discrete skills; lack of opportunities to move around the room and make choices; over reliance on punishment and extrinsic reward systems; and use of standardized booklet assessment tests (Bredekamp, 1987).

There is some evidence from longitudinal studies that developmentally appropriate programs have positive effects relative to student success in school and cost effectiveness to society. In a study of second and third grade low-risk males, Larsen and Robinson (1989) found that males who had attended a developmentally appropriate preschool program scored higher on language related achievement tests than males who had not attended preschool. Schweinhart and colleagues (Schweinhart, Berrueta-Clement, Barnett, Epstein, & Weikart, 1985; Schweinhart & Weikart, 1985) studied high-risk children who had attended various high quality preschool programs. Their findings included improved scholastic performance during early childhood, lower delinquency rates, and higher employment rates after graduation than control groups. In a study reported by Berrueta-Clement, Schweinhart, Barnett, Epstein, and Weikart (1984), high-risk subjects who had

attended an appropriate preschool program were more likely to complete high school, have lower delinquency rates, and have higher rates of employment one year after graduation than subjects who had not attended preschool.

There has been a great deal written concerning the negative consequences of developmentally inappropriate curricula (e.g., Elkind, 1986; Gallagher & Coche', 1987; Isenberg, 1987; Shepard & Smith, 1988; Sigel, 1987). However, little empirical data exist to confirm claims of damaging effects. There are a few studies, however, that support the contention that inappropriate programs are potentially harmful (e.g., Bentley & Wilson, 1989; Burts et al., in press; Dickinson & Snow, 1987; Hyson et al., 1989; Schweinhart, Weikart, & Larner, 1986).

Hyson and colleagues (1989) examined the relationship between the type of preschool program attended (high academic - developmentally inappropriate vs. low academic - developmentally appropriate) and children's anxiety during parent-child tasks, creativity, letter and number skills, and attitudes toward school. The researchers found that children who attended inappropriate programs scored higher on tests of letters and numbers, but they did not maintain the gains in the kindergarten year. These children also had more negative attitudes about school by the kindergarten year, were less creative, and were more anxious during parent-child tasks than children who had attended developmentally appropriate preschool programs.

Results of a longitudinal study conducted by Schweinhart et al. (1986) indicated that high-risk subjects who attended a preschool program emphasizing direct instruction exhibited a pattern of poor social performance when compared with subjects who had attended developmentally appropriate programs. These subjects had higher rates of juvenile delinquency and lower expectations for educational attainment. However, this study has come under some criticism, and must therefore, be viewed with caution (e.g., Bereiter, 1986; Gersten, 1986; Karwelt, 1988).

Stress

The stress literature is a vast and diverse field of study and includes perspectives from the biological, psychological, and sociological sciences. Numerous definitions of stress are found in the literature reflective of the various disciplines represented. In addition, various models or theories of stress have been proposed. Three types or models of stress identified by Lazarus (cited in Derogatis, 1982) include stimulus oriented theories, response oriented theories, and interactional theories. Stimulus oriented theories present stress "as a

potential residing within the stimulus properties of the organism's environment" (Derogatis, 1982, p. 272). Response oriented theories describe stress in response to the events in the environment. This was the theoretical framework used in designing our initial study. Interactional theories emphasize the characteristics of the individual as mediating factors between the stimulus and response. Both response oriented and interactional frameworks were used in the present study.

The concept of stress-resistance or invulnerability (Garmezy, 1981; Rutter, 1979a, 1979b) seems to support interactional theory. Rutter has listed five factors that may affect vulnerability: multiplicity of stressors, change in circumstances, factors in the child (e.g., sex, temperament, genetic background, race), factors in the family (e.g., positive parental relationships, extended family), and factors outside the home (e.g., neighborhood, quality of school).

With regard to multiplicity of stressors, Rutter pointed out that a single stressor did not particularly put children at risk. However, stressors "potentiated" each other so that the effects of stressors in combination with each other were more harmful than stressors considered individually. Today's young children are exposed to a multitude of stressors both in and outside the home (McCracken, 1986; Swick, 1987). Because of the cumulative effect, Rutter (1979a) recommended eliminating stressors whenever possible.

In looking at other variables that affect the vulnerability and invulnerability of children to stress, sex appears to be a significant factor. Males have been found to be more vulnerable to certain types of stress than females (e.g., Allen & Green, 1988; Burts et al., in press; Honig, 1986; Garmezy, Masten, & Tellegen, 1984; Rutter, 1979a). In addition, certain stressors affect males differently than females (Honig, 1986; Magnusson, 1982). For example, in a study conducted by Magnusson, greater anxiety reactions in response to achievement demanding situations were found for males when compared to females.

Race is a variable that may also affect how children react to stressors, particularly in the school setting. In discussing learning styles of young children, Charlesworth (1987) described the learning situation where black children tend to thrive as one that is oriented more towards other people than to things and where freedom, variation, and novelty abound. This is in contrast to what is found in most white middle-class schools which emphasize rules, standardization, conformity, precision, etc.

Dohrenwend and Dohrenwend (1970) considered both race and social status or socio-economic status to be sources of stress. They

found that lower class blacks experienced higher rates of several stressors when compared to lower class whites. In addition, they noted that middle class blacks experienced more stressors than did their white counterparts.

In a study exploring stress and burnout among preadolescent and early adolescent gifted students, Fimian and Cross (1986) found that classroom stress was strongly related to student burnout. According to Rutter (1979a), good school experiences can serve as a buffer and help counteract the effects of outside stressors. Appropriate practice (Bredekamp, 1987), which is based on the needs of young children and how they learn, appears to be the approach that would produce a low stress classroom environment. In contrast, inappropriate practice, which ignores much of what is known about young children, appears to be the approach that would produce a more stressful environment.

Relationship Between Appropriate and inappropriate Practice and Stress

Studies addressing the relationship between appropriate and inappropriate practices and stress have focused on short-term effects (e.g., Bentley, 1989; Burts et al., In press; Dickinson & Snow, 1987). Dickinson and Snow noted, in discussing the results of their research, that kindergarten children's developmental patterns in language and literacy could be measured as effectively using naturalistic tasks (letter writing, book reading, environmental print) as compared to more inappropriate test-like tasks (spelling test, decoding of isolated words). However, children enjoyed the naturalistic tasks, whereas the test-like tasks were highly stressful. The researchers warned that test-like tasks could negatively affect children's enjoyment and use of print.

Bentley and Wilson (1989) used interviews to obtain state anxiety stress scores of children in developmentally appropriate and developmentally inappropriate half day and whole day kindergarten programs. They found that children in the half day inappropriate classrooms were more stressed than children in half or whole day appropriate programs or whole day inappropriate programs. In discussing why greater stress levels were not found in the inappropriate whole day programs, the researchers speculated that the time pressure to achieve academics was not as great in the whole day inappropriate programs as it was in the half day inappropriate programs.

The present researchers have been investigating differences in frequencies of stress behaviors exhibited by children in developmentally appropriate versus developmentally inappropriate kindergarten classrooms. In an initial study (see Burts et al., in press), three

Instruments were developed and used to identify developmentally appropriate and inappropriate classrooms and to identify children's stress behaviors. The most important findings from the study indicated that children in a developmentally inappropriate classroom exhibited significantly more stress behaviors than children in a developmentally appropriate classroom. Differences were also found between the two classrooms in the amount of time spent in various activities. More center, group story, and transition activities were found in the appropriate classroom, while there were more whole group and workbook/worksheet activities in the inappropriate classroom. Marginal gender differences were also noted with males exhibiting more overall stress behaviors than females. The purpose of the present study was to see if findings from the initial study would replicate using a larger sample and to explore the interactive effects of SES and race with stress and developmentally appropriate and inappropriate practices.

Method

Subjects

Permission to conduct the present study was obtained from 60 of 64 principals (94%) in a public school district located in a medium size southern city. The Teacher Questionnaire (see measures section) was distributed to all kindergarten teachers in the participating schools ($n = 219$). Of the 219 questionnaires distributed, 204 (93%) were returned. A principle components analysis was used to analyze the results, and the teachers were ranked according to their scores from the extremes of appropriateness to inappropriateness on the most reliable factor. Those with standardized factor scores falling at least 1 SD above or below the mean (of all kindergarten teachers on the designated factor of the instrument) were contacted for further participation in the study ($n = 20$). The most reliable factor was titled Developmentally Inappropriate Materials and Activities and had an Eigenvalue of 7.40 and Cronbach's Alpha of .84. The factor had 11 items and included items such as workbooks and ditto sheets, flashcards, seatwork, and whole group activities (see Charlesworth, Burts, Hart, Hernandez, Kirk, & Mosley, 1990).

To verify their questionnaire responses, teachers were rated by at least two independent observers using the Checklist for Rating Developmentally Appropriate Practice in Kindergarten Classrooms (see measures section). The classroom observations indicated that 19 of the 20 teachers had average ratings that were congruent with their scores on the Teacher Questionnaire. The one teacher whose questionnaire and checklist scores were not congruent was an inappropriate teacher who team taught with an appropriate teacher and had questionnaire

responses identical to the appropriate teacher's.

Of the remaining 19 classrooms, 12 were selected for further participation in the study, 6 developmentally appropriate and 6 developmentally inappropriate. The other seven classrooms were eliminated for various reasons including unwillingness to participate further, team teaching, and teacher aids in the classroom. Checklist mean ratings for the appropriate and inappropriate classrooms included in the study were 4.1 and 1.9 respectively (5 = 100% appropriate; 1 = 100% inappropriate).

Parental permission was obtained for 204 children (99 males, 105 females; 80 blacks, 124 whites) in the 12 classrooms. This represented 89% of the children in the 12 classrooms. There were 103 children in appropriate classrooms and 101 children in inappropriate classrooms. Children were from lower to upper socio-economic backgrounds according to the Hollingshead (1975) Four Factor Index of Social Status which uses occupation, education, marital status, and gender to determine SES. SES scores included the full range from 8-66 with a mean of 34.7 and a standard deviation of 14.2.

Data Collection

Data for the study were collected during the spring of the school year. Graduate students in early childhood education and faculty in child development and early childhood education composed the research team. Extensive training was conducted prior to beginning the study, and checks were made throughout the project to determine if further training would be needed.

Three instruments were used to gather data for the study. The Teacher Questionnaire (Charlesworth et al., 1989) was used to identify teachers who used the most and least appropriate practices. The Checklist for Rating Developmentally Appropriate Practice In Kindergarten Classrooms (Charlesworth et al., 1989) was used to validate the identified teachers' questionnaire responses. The Classroom Child Stress Behavior Instrument was an observational measure used to identify child behaviors that are believed to be indicators of stress.

Measures

Teacher Questionnaire. This measure was developed using the NAEYC guidelines for developmentally appropriate practice (Bredekamp, 1987; NAEYC, 1986). The measure includes two subscales (Teacher Beliefs Scale and Instructional Activities Scale) and a demographic information section. The Teacher Beliefs Scale is a 30 item paper and pencil measure designed to tap the teacher's philosophy regarding

developmentally appropriate practices as outlined by NAEYC. Teachers were asked to rate each item as to how important each is in their classroom. For instance, items such as: "It is _____ for children to be allowed to cut their own shapes; perform their own steps in an experiment; and plan their own creative drama, art, and writing activities" are accompanied by a 5-point Likert scale with 1 defined as "Not Important At All" and 5 defined as "Extremely Important." In prior work, the measure produced four reliable factors with subscale reliability as assessed by Cronbach's alpha ranging from .68 to .85 (see Burts et al., in press; Charlesworth et al., 1989).

The Instructional Activities Scale was used to assess how often teachers perceived children participating in various classroom activities. This scale contains 31 items and uses a 5-point Likert scale ranging from 1 defined as "Never or Almost Never (less than monthly)" to 5 defined as "Very Often (1-3 times daily)." Teachers were asked to mark the scale for each item such as: "practicing handwriting on lines." In prior work, six reliable factors were identified with internal consistency, as measured by Cronbach's alpha, ranging from .60 to .75 (see Burts et al., in press; Charlesworth et al., 1989).

Checklist for Rating Developmentally Appropriate Practice in Kindergarten Classrooms. The checklist was also developed using the NAEYC guidelines (NAEYC, 1986). The observational measure consists of 28 items reflective of items included on the Teacher Questionnaire. To verify the teachers' questionnaire responses, teachers granting permission were rated by at least two independent observers. Observers rated each item on a 5-point scale with the most appropriate descriptors listed under 5 and the least appropriate descriptors listed under 1. If the item they observed was close to 100% appropriate, the observers marked 5; if it was about equally appropriate and inappropriate, they marked 3; and if it was close to 100% inappropriate, they marked 1 (see Burts et al., in press; Charlesworth et al., 1989).

Classroom Child Stress Behavior Instrument. To document children's stress behaviors, observers were trained to use a scan sampling procedure (see Altmann, 1974) along with the Classroom Child Stress Behavior Instrument (see Burts et al., in press). Items on the measure were derived from teacher input and literature documenting manifestations of stress in child behaviors. Over 50 child stress indices are listed including behaviors such as: nail biting (Anthony, 1959; Bloom, Chaney, & Snoddy, 1986); physical hostility/fights (Allen & Green, 1988; Garnezy, 1981; Johnson, 1986); tremors or tics (Schultz & Heuchert, 1983); and nervous laughter (Selye, 1976). The measure also includes a nonstress category and classification of child activities. Activity classifications include group oriented activities (small group,

whole group, music, group story, center), individual oriented activities (transitions, waiting, workbook/worksheet, punishment), and other (e.g., sharing, things not already listed).

Observers were in each classroom for six to seven nonconsecutive days throughout the spring. Subjects were scanned in a predetermined random order daily. A total of 90 scans were coded for each subject. Interrater reliability between a reliability judge and observers (based on 106 observations with each observer) was .89 as estimated by Cohen's kappa.

Measures of children's stress behaviors were created by calculating the proportion of scans coded for the nonstress and stress categories within each of the activity types (e.g., whole group, center). This was done to control for the potential confound of time spent in an activity in the different classrooms, and stress scores within activity type. To compute an activity type proportional stress score for each child, frequencies of the child's stress behaviors within each activity type were divided by the total number of observations (90). Nonstress proportional scores were created in the same manner. Stress and nonstress proportional scores were calculated for each activity type. The proportional stress scores for each activity type were then summed to yield a total stress score for each child.

Results

To control for statistical dependencies among the dependent variables (activity type stress scores and activity type, depending on the set of analyses) multivariate analyses of variance (MANOVAS) were conducted. The unbalanced method was used to control for unequal cell sizes. For these analyses, a median split was performed on the Hollingshead scores to create an SES factor representing high and low SES scores. To control for the possibility of covariance between the means and variances of proportional data in subsequent analyses, an arc-sine transformation was applied to the proportional scores prior to analysis (see Winer, 1971, p. 399). Post hoc tests (simple effects) were used to dismantle interactions and analyze mean differences.

Main and interactive effects of classroom type, sex, SES, and race on stress behaviors were examined with 2(classroom type) X 2(sex of child) X 2(high/low SES) X 2(race-black/white) MANOVAS where the proportional stress scores for each activity type served as variates. Because a single analysis including all the activity type proportional stress scores was impractical, two separate MANOVAS were conducted. The first analysis included group oriented activities comprised of story, small group, whole group, music, and center time proportional stress

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scores. The second analysis included individual activity types comprised of transition, waiting, workbook/worksheet, and punishment proportional stress scores. A separate 2(classroom type) X 2(sex of child) X 2(high/low SES) X 2(race-black/white) ANOVA was conducted on total stress scores since this measure represented a linear combination of all activity type stress scores.

Results for Total Stress Scores

A significant univariate main effect of classroom type was obtained from the ANOVA for total stress scores (stress behaviors in all activity types combined), $F(1,188) = 133.86$, $p < .001$. Mean scores indicated significantly more stress behaviors occurring in the inappropriate classrooms when compared to the appropriate classrooms (see Table 1). These findings for the total stress scores were corroborated in analyses using classroom type (appropriate and inappropriate) rather than child as unit of analysis $t(11) = 5.13$, $p < .001$.

The ANOVA also produced significant and marginally significant interaction effects for classroom type and sex $F(1,188) = 3.64$, $p < .05$ and SES and race $F(1,188) = 3.57$, $p < .06$. Significant findings from simple effects analysis revealed that boys in inappropriate classrooms displayed more total stress behaviors than did boys in appropriate classrooms ($M_s = .45$ and $.24$; $SD = .09$ and $.08$, respectively). Also, low SES black children exhibited significantly more total stress behaviors than did low SES white children ($M_s = .41$ and $.29$; $SD = .13$ and $.10$, respectively), regardless of classroom type. Further, low SES black children displayed more total stress behavior than did high SES black children ($M_s = .41$ and $.30$; $SD = .13$ and $.10$, respectively).

Results for Group Oriented Activity Stress Scores

Significant multivariate main effects (using Wilk's lambda as the criterion) emerged in analysis on group oriented activity type stress scores for classroom type and race $F(5,184) = 12.22$ and 2.90 , $p_s < .001$. Subsequent univariate analyses performed on group oriented activity type stress scores revealed significant effects for classroom type on small group activity stress scores $F(1,188) = 32.40$, $p < .001$. More stress occurred during small group in inappropriate versus appropriate classrooms (see Table 1).

Significant multivariate interactive effects also emerged for classroom type by race and for SES by race $F(5,184) = 3.33$ and 1.87 , $p_s < .01$ and $.05$, respectively. Although mean scores and mean differences were small, white children displayed significantly more stress behaviors in inappropriate classrooms when compared to white children

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in more appropriate classrooms during group story activities ($M_s = .04$ and $.02$; $SD = .02$ and $.02$, respectively). Finally, whereas low SES black children exhibited more stress behaviors during small group activities than low SES white children ($M_s = .03$ and $.01$; $SD = .03$ and $.01$, respectively), high SES white children displayed more stress behavior than did high SES black children during small group activities ($M_s = .03$ and $.01$, $SD = .03$ and $.02$, respectively). Moreover, low SES black children exhibited more stress behaviors during small group activities than did high SES black children ($M_s = .03$ and $.01$; $SD = .03$ and $.01$, respectively).

Results for Individual Oriented Activity Stress Scores

Significant multivariate main effects (using Wilk's lambda as the criterion) also emerged in analyses on individual oriented activity type stress scores for classroom type, SES, and race $F(4,185) = 82.53$, 2.23 , and 2.94 , $p_s < .05$. Subsequent univariate analyses performed on individual oriented activity types stress scores revealed significant effects for classroom type on workbook/worksheet activities $F(1,188) = 139.72$, $p < .001$; transition $F(1,188) = 21.74$, $p < .001$; waiting $F(1,188) = 156.40$, $p < .001$; and punishment $F(1,188) = 18.42$, $p < .001$. Children in inappropriate classrooms displayed more stress behaviors than did children in appropriate classrooms during workbook/worksheet activities, waiting, transition, and punishment activities (see Table 1).

A significant multivariate classroom type by sex by SES by race four-way-interaction emerged in the MANOVA $F(4,185) = 2.51$, $p < .05$. Results of subsequent univariate analyses indicated that low SES black females exhibited more stress behavior during transition activities than did low SES white females ($M = .03$ and $.01$; $SD = .02$ and $.01$, respectively).

Another significant multivariate interaction effect was found for classroom type by race $F(4,185) = 3.71$, $p < .01$. Subsequent univariate analyses revealed that black children in inappropriate classrooms displayed significantly more stress during transitions and waiting than did black children in appropriate classrooms ($M_s = .03$ and $.01$, $.06$ and $.01$, $SD = .02$ and $.01$, $.04$ and $.01$ respectively). White children displayed significantly more stress behavior during punishment in inappropriate classrooms when compared to white children in appropriate classrooms ($M = .007$ and $.001$, $SD = .014$ and $.003$, respectively).

Classroom Difference in Activity Types

Two 2(classroom type) X 2(sex) multivariate analyses of

covariance MANOVAS controlling for SES and race were conducted to explore differences in group oriented and individually oriented activity types. Findings revealed significant multivariate main effects $F(4,196) = 68.63$ and 92.16 , $p < .001$. No interactive multivariate effects emerged from these analyses. As shown in Table 2, significant univariate effects indicated significantly more transitions, waiting, small group, workbook/worksheet, punishment, and whole group activities occurring in the inappropriate classrooms as compared to the appropriate classrooms. In contrast, more music, group story, and center time activities were observed in appropriate classrooms.

Discussion

Findings from the present study indicated differences in the types of activities found in developmentally appropriate and developmentally inappropriate classrooms, differences in the stress behaviors of children in those classrooms, and interactive effects of SES and race with stress in appropriate and inappropriate classrooms. More story, music, center, and other activities were observed in the appropriate classrooms while more workbook/worksheet, small group, whole group, transitions, waiting, and punishment were noted in inappropriate classrooms. These findings are similar to those of the initial study (see Burts et al., in press) where more center, story, and transitions were found in the appropriate classroom and more whole group and workbook/worksheet activities were found in the inappropriate classroom. The findings support the effectiveness of the Checklist for Rating Developmentally Appropriate Practice as a tool for identifying appropriate and inappropriate classrooms.

Corroborating results of the initial study (see Burts et al., in press), the results of the present study indicated that children in developmentally inappropriate classrooms exhibited significantly more stress behaviors than children in the more appropriate classrooms. Other findings indicated that significantly more stress behaviors were observed in inappropriate classrooms versus appropriate classrooms during waiting, transition, group, workbook/worksheet, and punishment activities. The generally low occurrence of stress noted in several of the activity types as compared to the total amount of stress exhibited substantiate the cumulative effects of stress (Rutter, 1979a).

Results are also consistent with those of Bentley and Wilson (1989) that indicated more stress exhibited by children in inappropriate half day kindergarten programs. Findings from Bentley and Wilson and the initial and present studies support the position of many early childhood experts (e.g., Charlesworth, 1989; Elkind, 1986, 1988, 1989; Kamil, 1985; Gallagher & Coche', 1987) concerning inappropriate

practice. Empirical evidence is mounting to support the contention that developmentally inappropriate curricula, with its narrowly focused academic emphasis, is potentially harmful to young children. It also appears that certain segments of children are even more at risk than others.

As was found in the initial study, males appear to be more susceptible to stress than females. Boys in inappropriate classrooms exhibited more total stress behaviors when compared to boys in appropriate classrooms. This finding is consistent with the literature that indicates that male children are more vulnerable to stress than female children and that certain stressors affect males differently than females (e.g., Honig, 1986; Humphrey & Humphrey, 1985; Rutter, 1979a). Magnusson (1982) cited greater anxiety reactions by males, when compared to females, in response to achievement demanding situations.

The literature also documents gender differences in preferences of play materials (Liss, 1986) and small motor development (Anselmo, 1987). Liss found that boys preferred to play with blocks, tools, cars, and trucks while girls preferred to play with scissors and paper, paints, chalkboards, etc. When examining the pencil manipulation skills of young children, Saida and Miyashita (1979) found 3-year-old girls to be more advanced than 3-year-old boys in finger posture and the grasping position. Paper and pencil activities, prevalent in developmentally inappropriate curricula, may have more negative consequences for males since boys generally are less skillful at paper and pencil activities, and they seem to enjoy them less than girls. The emphasis on achievement type activities in inappropriate classrooms may also contribute to the greater stress exhibited by males.

Differences were also found with regard to socio-economic status and race. The most substantive findings indicated that low SES black children exhibited more total stress than low SES white children and than high SES black children. Additional findings suggest these differences occurred particularly during small group and transitional activities. Inappropriate classrooms also appeared to elicit more stress behavior in blacks during waiting and transitions than did appropriate classrooms.

These findings, on the whole, suggest that black children are more at risk than their white counterparts and that low SES blacks are especially vulnerable. In her review of the literature on stress, Honig (1986) includes low socioeconomic status as a variable associated with stress in the lives of young children. Dohrenwend and Dohrenwend (1970) noted that lower class blacks experienced higher rates of several

stressors when compared to lower class whites. Perhaps as Charlesworth (1987) suggested (see Introduction), the learning style exhibited by black children is in conflict with the more restrictive style prevalent in most white middle-class schools. This conflict may cause additional stress to be placed on low SES black children.

The initial and present studies by the current researchers are beginning to provide an empirical data base in an area where there has been much conjecture, but little hard evidence. Stress has been examined from both response oriented and interactional oriented frameworks (Derogatis, 1982). Support has been obtained documenting that developmentally inappropriate educational programs (which emphasize the use of workbooks, ditto sheets, and skill based rote learning) are potentially harmful to young children. Males seem to be more susceptible to inappropriate practice than females. In addition, low socio-economic black children appear to be more at risk than high SES children or than their low SES white counterparts.

As Breznitz and Goldberger (1982) noted, repeated exposure, duration, and pacing of stressors are important factors in determining the potential impact of stress. Since today's young children are exposed to a multitude of stressors outside the school setting, additional stress produced in the classroom may have serious consequences. Elkind (1989) has stated that we may be placing children at risk for no useful purpose when we provide highly academic instruction. Humphrey and Humphrey (1985) have pointed out possible long-term effects of poorly managed stress for children in school including child burnout and diminished reserves of energy for coping. Findings from the researchers' two studies suggest that curricula should be planned to provide a setting that is developmentally appropriate. However, additional research is needed to identify other factors associated with classroom stress and to determine the long-term effects of developmentally inappropriate practice on the development of young children before firm conclusions can be drawn.

References

- Allen, D.A., & Gruen, V.P. (1988). Helping children cope with stress. Early Child Development and Care, 37, 1-11.
- Altmann, J. (1974). Observational study of behavior: Sampling methods. Behavior, 49, 227-267.
- Anthony, J. (1959). Stress in early childhood. In, The nature of stress disorder (pp. 199-227). Springfield, IL: Charles C. Thomas.
- Bentley, S., & Wilson, E. (1989, November). NAEYC's developmentally appropriate practice guidelines: Current research. Paper presented at the pre-conference sessions of the meeting of the National Association for the Education of Young Children, Atlanta, GA.
- Bereiter, C. (1986). Does direct instruction cause delinquency? Early Childhood Research Quarterly, 1, 289-292.
- Berrueta-Clement, J.R., Schweinhart, L.J., Barnett, W.S., Epstein, A.S., Weikart, D.P. (1984). Changed lives: The effects of the Perry Preschool Program on youths through age 19. Ypsilanti, MI: High Scope.
- Blom, G.E., Cheney, B.D., & Snoddy, J.E. (1986). Stress in childhood. New York: Teachers College Press.
- Brdekamp, S. (1987). Developmentally appropriate practice in early childhood programs serving children from birth through age 8. Washington, D.C.: National Association for the Education of Young Children.
- Breznitz, S., & Goldberger, L. (1982). Stress research at a crossroads. In: L. Goldberger & S. Breznitz (Eds.), Handbook of stress: Theoretical and clinical aspects (pp. 2-6). New York: The Free Press.
- Burts, D.C., Hart, C.H., Charlesworth, R., & Kirk, L. (in press). A comparison of frequencies of stress behaviors observed in kindergarten children in classrooms with developmentally appropriate versus developmentally inappropriate instructional practices. Early Childhood Research Quarterly.
- Caruso, D., & Oaks, P. (1988, November). Assessing teachers' use of developmentally appropriate practices. Paper presented at the pre-conference sessions for the meeting of the National Association for the Education of Young Children, Anaheim, CA.
- Charlesworth, R. (1989). Behind before they start? Young Children, 44(3), 5-13.

- Charlesworth, R. (1985). Readiness: Should we make them ready or let them bloom? Daycare and Early Education, 12(3), 25-27.
- Charlesworth, R., Hart, C.H., Burts, D.C., & Hernandez, S. (1989). Identifying kindergarten beliefs and practices: A questionnaire approach. Manuscript submitted for publication.
- Charlesworth, R., Burts, D.C., Hart, C.H., Hernandez, S., Kirk, L., & Mosley, J. (1990). The teacher questionnaire: An instrument for assessing the needs of kindergarten teachers' in-service training. The Journal of Early Childhood Teacher Education, 11(1), 9-10.
- Derogatis, L.R. (1982). Self-report measures of stress. In L. Goldberger & S. Breznitz (Eds.), Handbook of stress: Theoretical and clinical aspects (pp. 270-294). New York: The Free Press.
- Dickenson, D.K., & Snow, C.E. (1987). Interrelationships between prereading and oral language skills in kindergartners from two social classes. Early Childhood Research Quarterly, 2, 1-25.
- Dohrenwend, B.S. (1973). Social status and stressful life events. Journal of Personality and Social Psychology, 28, 225-235.
- Dohrenwend, B.S., & Dohrenwend, B.P. (1970). Class and race as status-related sources of stress. In S. Levine & N.A. Scotch (Eds.), Social Stress (pp. 111-140). Chicago: Aldine.
- Egerton, H.A. (1987). The shifting of kindergarten curriculum. ERIC Digest. Urbana, IL: ERIC Clearinghouse on Elementary and Early Childhood Education.
- Elkind, D. (1986). Formal education and early childhood education: An essential difference. Phi Delta Kappan, 67, 631-636.
- Elkind, D. (1989). Miseducation: Preschoolers at Risk. New York: Knopf.
- Elkind, D. (1988). The hurried child: Growing up too fast too soon (rev. ed.). Needham, MA: Addison-Wesley.
- Fimian, M.J., & Cross, A.H. (1986). Stress and burnout among preadolescent and early adolescent gifted students: A preliminary investigation. Journal of Early Adolescence, 6, 247-267.
- Gallagher, J.M., & Coche', J.H. (1987). The clinical and educational concerns over pressuring young children. Early Childhood Research Quarterly, 2, 203-210.

- Garnezy, N. (1981). Children under stress: Perspectives on antecedents and correlates of vulnerability and resistance to psychopathology. In A.I. Rabin, J. Aronoff, A.M. Barclay, & R.A. Zucker (Eds.), Further explorations in personality (pp. 196-269). New York: Wiley.
- Garnezy, N., Masten, A.S., & Tellegen, A. (1984). The study of stress and competence in children: A building block for developmental psychopathology. Child Development, 55, 97-111.
- Gersten, R. (1980). Response to "Consequences of three preschool curriculum models through age 15." Early Childhood Research Quarterly, 1, 293-302.
- Hatch, J.A., & Freeman, E.B. (1988). Kindergarten philosophies and practices: Perspectives of teachers, principals, and supervisors. Early Childhood Research Quarterly, 3, 151-166.
- Hills, T. (1987). Children in the fast lane: Implications for early childhood policy and practice. Early Childhood Research Quarterly, 2, 265-273.
- Hirsh-Pasek, K., & Cone, J. (1989, April). Hurrying children: How does it affect their academic, social, creative, and emotional development? Paper presented at the biennial meeting of the Society for Research in Child Development, Kansas City, MO.
- Hollingshead, A.B. (1975). Four Factor Index of Social Status. Unpublished manuscript, Yale University, Department of Sociology, New Haven.
- Honig, A.S. (1980). Stress and coping in children. In J.B. McCracken (Ed.), Reducing stress in young children's lives (pp. 142-167), Washington, D.C.: National Association for the Education of Young Children.
- Humphrey, J., & Humphrey, J. (1985). Controlling stress in children. Springfield, IL: Charles C. Thomas Publisher.
- Hyson, M.C., Van Trieste, K.L., & Rauch, V. (1989, November). NAEYC's developmentally appropriate practice guidelines: Current research. Paper presented at the pre-conference sessions of the meeting of the National Association for the Education of Young Children, Atlanta, GA.
- Isenberg, J. (1987). Societal influences on children. Childhood Education, 63, 341-342.
- Jensen, M., & Chevalier, Z. (1988, November). Can early childhood teacher education students use NAEYC'S developmentally appropriate practice guidelines to analyze observed or described circular practices? Paper presented at the pre-conference sessions for the meeting of the National Association of the Education of Young Children, Anaheim, CA.

- Johnson, J.H. (1986). Life events as stressors in childhood and adolescence. Newbery Park, CA: Sage.
- Kamii, C. (1985). Leading primary education toward excellence: Beyond worksheets and drill. Young Children, 40(6), 3-9.
- Karweit, N. (1988). Quality and quantity of learning time in preprimary programs. The Elementary School Journal, 89, 119-133.
- Larsen, J.M., & Robinson, C.C. (1989). Later effects of preschool on low-risk children. Early Childhood Research Quarterly, 4, 133-144.
- Liss, M.B. (1986). The play of boys and girls. In G. Fein & M. Rivkin (Eds.), The young child at play: Reviews of research, volume 4 (pp. 127-139). Washington, DC: National Association for the Education of Young Children.
- Magnusson, D. (1982). Situational determinants of stress: An interactional approach. In L. Goldberger & S. Breznitz (Eds.), Handbook of stress: Theoretical and clinical aspects (pp. 231-253). New York: The Free Press.
- McCracken, J.B. (1986). Reducing stress in young children's lives. Washington, D.C.: National Association for the Education of Young Children.
- Montessori, M. (1964). The Montessori method. New York: Schocken. (Original work published in 1912).
- National Association for the Education of Young Children. (1986). NAEYC position statement on developmentally appropriate practice in programs for 4- and 5-year-olds. Young Children, 41(6), 20-29.
- Piaget, J. (1950). The psychology of intelligence. London: Routledge & Kegan Paul.
- Piaget, J. (1952). The origins of intelligence in children. New York: Norton.
- Piaget, J. (1972). Science of education and Psychology of the child (rev. ed.). New York: (Original work published in 1965.)
- Rutter, M. (1979a). Maternal deprivation, 1972-1978: New findings, new concepts, new approaches. Child Development, 50, 283-305.
- Rutter, M. (1979b). Protective factors in children's responses to stress and disadvantage. In M.W. Kent & J.E. Rolf (Eds.) Primary prevention of psychopathology, Volume III: Social competence in children (pp. 49-74). Hanover, NH: University Press of New England.

- Saida, Y., & Miyashita, M. (1979). Development of fine motor skill in children: Manipulation of a pencil in young children aged two to six years old. Journal of Human Movement Studies, 5, 104-113.
- Schultz, E.W., & Hauchert, C.M. (1983). Child stress and the school experience. New York: Human Sciences Press, Inc.
- Schweinhart, L., Herrueta-Clement, J.R., Barnett, W.S., Epstein, A.S., & Weikart, D.P. (1985). The promise of early childhood education. Phi Delta Kappan, 66, 548-553.
- Schweinhart, L.J., & Weikart, D.P. (1988). Education for young children living in poverty: Child-initiated learning or teacher-directed instruction? The Elementary School Journal, 89, 213-225.
- Schweinhart, L.J., & Weikart, D.P. (1985). Evidence that good early childhood programs work. Phi Delta Kappan, 66, 545-551.
- Schweinhart, L.J., Weikart, D.P., & Larner, M. (1986). Consequences of three preschool curriculum models through age 15. Early Childhood Research Quarterly, 1, 15-45.
- Selye, H. (1976). The stress of life (rev. ed.). New York: McGraw-Hill.
- Shepard, L.A., & Smith, M.L. (1988). Escalating academic demand in kindergarten: Counterproductive policies. The Elementary School Journal, 89, 135-145.
- Sigel, I.E. (1987). Does hothousing rob children of their childhood? Early Childhood Research Quarterly, 2, 211-225.
- Swick, K. (1987). Managing classroom stress. Dimensions, 15(4), 9-11.
- Walsh, D.J. (1989). Changes in kindergarten: Why here? Why now? Early Childhood Research Quarterly, 4, 377-391.
- Winer, B.J. (1971). Statistics principles in experimental design (2nd ed.). New York: McGraw-Hill.

TABLE 1
MEANS AND STANDARD DEVIATIONS FOR CLASSROOM TYPE ON MEASURES OF
STRESS WITHIN GROUP AND INDIVIDUAL ORIENTED ACTIVITY TYPES

	Appropriate	Inappropriate
Small Group		
M	.01	.04*
SD	.01	.04
Whole Group		
M	.16	.15
SD	.06	.08
Music		
M	.006	.002
SD	.002	.006
Group Story		
M	.02	.03
SD	.03	.03
Center		
M	.02	.01
SD	.02	.01
Transition		
M	.01	.03*
SD	.01	.02
Waiting		
M	.01	.05*
SD	.01	.03
Workbook/Worksheet		
M	.02	.11*
SD	.02	.08
Punishment		
M	.003	.02*
SD	.002	.01
Other		
M	.001	.000
SD	.001	.000
Total Stress		
M	.25	.44*
SD	.10	.13

* $p < .001$

NOTE. Asterisk denotes where significant difference lies between groups.

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR CLASSROOMS ON FREQUENCIES OF ACTIVITY TYPES

Activity	Appropriate	Inappropriate
Small Group		
M	2.68	7.00*
SD	3.77	6.87
Whole Group		
M	25.87	35.63*
SD	6.94	12.56
Group Story		
M	11.84*	4.85
SD	4.87	4.22
Music		
M	7.32*	1.31
SD	2.04	2.34
Center		
M	24.19*	6.38
SD	9.02	6.37
Transition		
M	2.11	4.55*
SD	2.17	2.40
Waiting		
M	2.50	8.08*
SD	2.08	4.06
Workbook/Worksheet		
M	3.89	21.31*
SD	3.03	12.33
Punishment		
M	.26	.43*
SD	.08	.09
Other		
M	9.34*	.46
SD	3.26	.09

* p<.001

Note: Asterisk denotes where significant difference lies between groups.